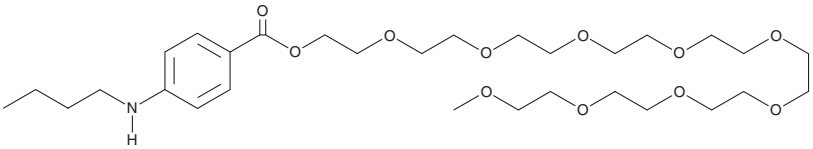
# PRODUCT INFORMATION

## Benzonatate

*Item No. 23936*

**CAS Registry No.:** 104-31-4
**Formal Name:** 4-(butylamino)-benzoic acid, 3,6,9,12,15,18,21,24,27-nonaoxaoctacos-1-yl ester
**MF:** $C_{30}H_{53}NO_{11}$
**FW:** 603.8
**Purity:** ≥98%
**UV/Vis.:** $\lambda_{max}$: 231, 310 nm
**Supplied as:** A solution in ethanol
**Storage:** -20°C
**Stability:** ≥2 years



*Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.*

### Laboratory Procedures

Benzonatate is supplied as a solution in ethanol. To change the solvent, simply evaporate the ethanol under a gentle stream of nitrogen and immediately add the solvent of choice. Solvents such as DMSO and dimethyl formamide purged with an inert gas can be used. The solubility of benzonatate in these solvents is approximately 50 mg/ml.

Benzonatate is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, the ethanolic solution of benzonatate should be diluted with the aqueous buffer of choice. Benzonatate has a solubility of approximately 0.5 mg/ml in a 1:1 solution of ethanol:PBS (pH 7.2) using this method.

### Description

Benzonatate is a reversible voltage-gated sodium channel blocker.[1] It blocks $Na_v1.7$ currents in a concentration- and voltage-dependent manner ($IC_{50}$s = 5.9 and 1.4 µM at holding potentials of -100 and -70 mV, respectively) and inhibits action potential firing in catecholamine A differentiated (CAD) cells. Benzonatate also blocks 80% of $Na_v1.3$ currents in N1E-115 cells when used at a concentration of 100 µM. *In vivo*, benzonatate (0.85 mg/min) reduces the frequency, but has no effect on the amplitude, of the cough reflex in anesthetized dogs.[2] Formulations containing benzonatate have been used as antitussive agents for the treatment of coughs.

### References


1. Evans, M.S., Maglinger, G.B., and Fletcher, A.M. Benzonatate inhibition of voltage-gated sodium currents. *Neuropharmacology* **101**, 179-187 (2016).
2. Yanaura, S., Hosokawa, T., Kitagawa, H., *et al*. Effects of peripheral airway response on the cough reflex (author's transl). *Nihon Yakurigaku Zasshi.* **76(8)**, 709-716 (1980).



**WARNING**
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

**SAFETY DATA**
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent *via* email to your institution.

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